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Scanning Large Aerospace structures using open-architecture crawlers

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ABSTRACT

Complex large metallic and composite structures are requiring cost-effective rapid inspection capability. Removal of components from the structure for NDE at an inspection facility is not economical. Detection and characterization of defects are labor intensive, time consuming and when the process is manual the results are subjected to human error. These limitations of NDE created a need for portable, user friendly inspection systems that can rapidly scan large areas of complex structures and locate all the detrimental material conditions. Addressing this need has been an evolutionary process that followed the technology trend, and unique devices were developed to allow rapid field inspection. This development involves multi-disciplinary approaches to integrate NDE, telerobotics, neural networks, materials science, imbedded computing and automated control. These efforts have led to the development of various portable inspection systems and the current trend is towards fully automatic systems that will operate autonomously.